



Whistler Design Preview

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Microsoft Cluster Service

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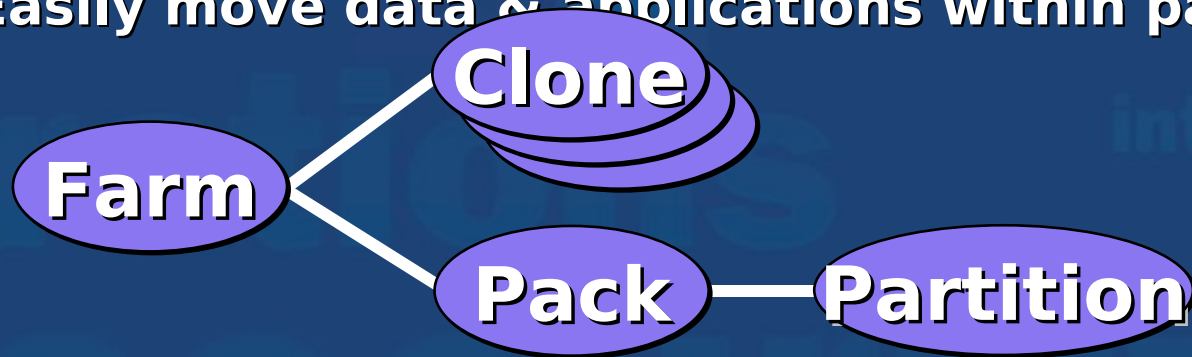
Enterprise Server Group
Microsoft Corporation

Agenda

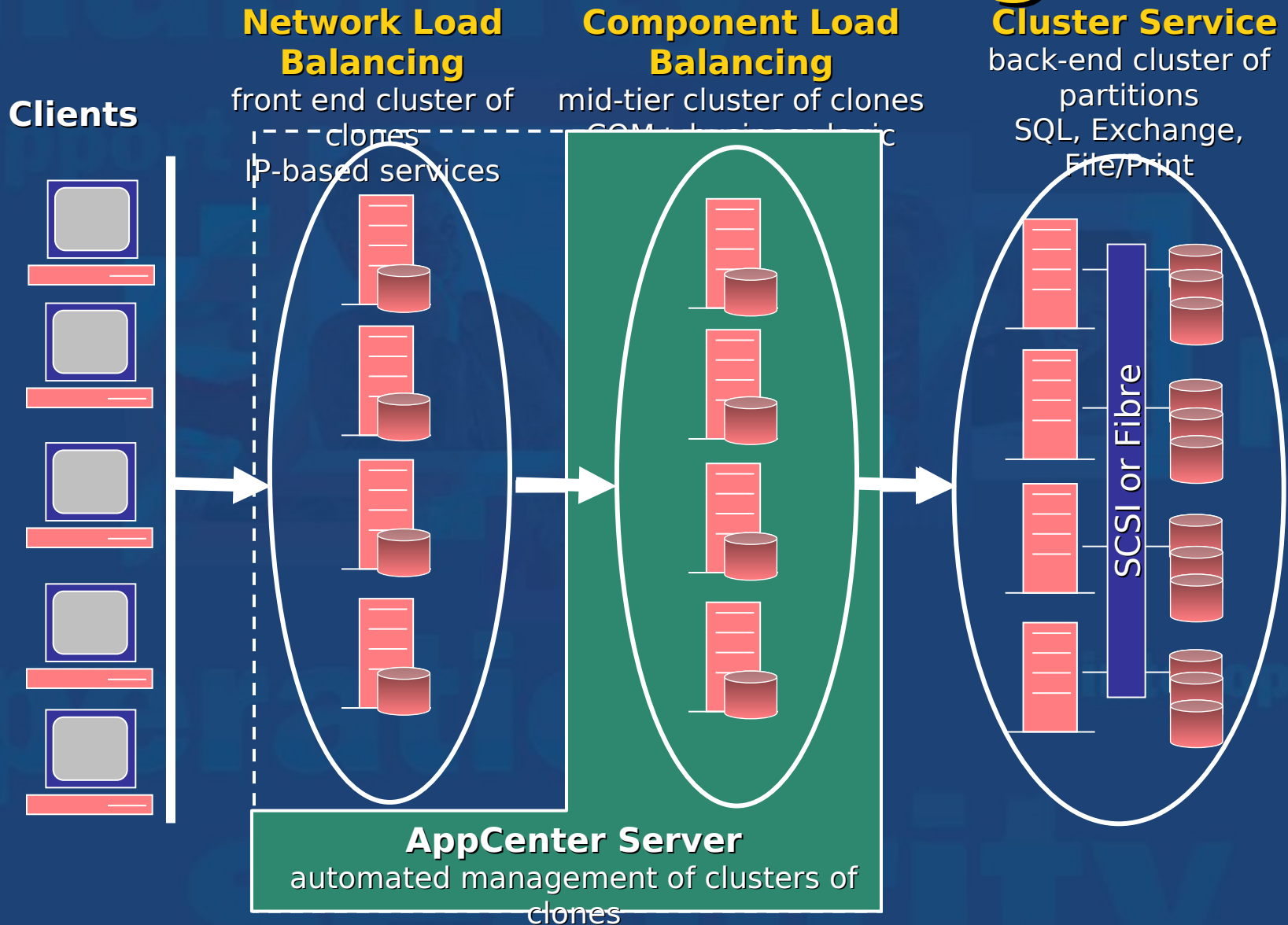
- Quick overview of Windows clustering
- Microsoft Cluster service Whistler plans
- Cluster service directions after Whistler
- For more information...

Cluster Terminology

- **“Farm”**: Multiple servers at a single site
- **“Clones”**: Identical, interchangeable servers
 - Data changes are replicated to all clones
- **“Partition”**: unique chunk of data or logic
 - Data that’s too large for cost-effective duplication
 - Data that’s changing too rapidly for replication
- **“Pack”**: Group of servers that can host a partition
 - Easily move data & applications within pack



Windows Clustering



Agenda

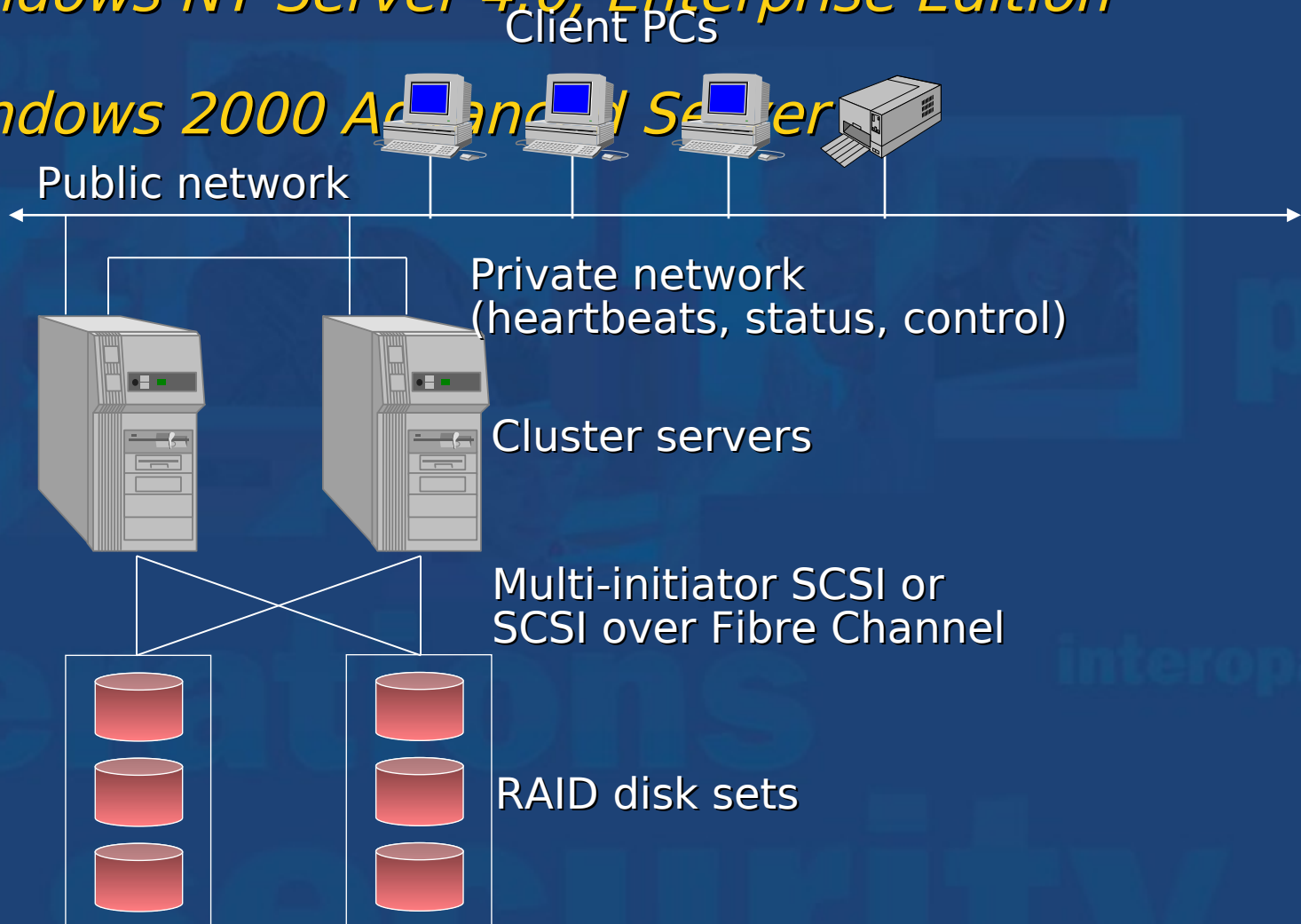
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4-Node Server Clusters

- **Expected capabilities & benefits**
 - Up to 4 nodes in cluster
 - Lower cost of excess capacity
 - Increased management flexibility
 - Multiple “possible” and “preferred” owners
 - Control failover of mixed workloads
 - Easily re-assign server roles in failover scenarios
 - “Cascading” failover to multiple alternates
 - “Mix and match” certification rules
 - Lower cost & effort to certify configurations
 - More choices in mixing servers within clusters
- **Expected differences from Windows 2000 Datacenter**
 - Broader availability
 - Broader hardware support

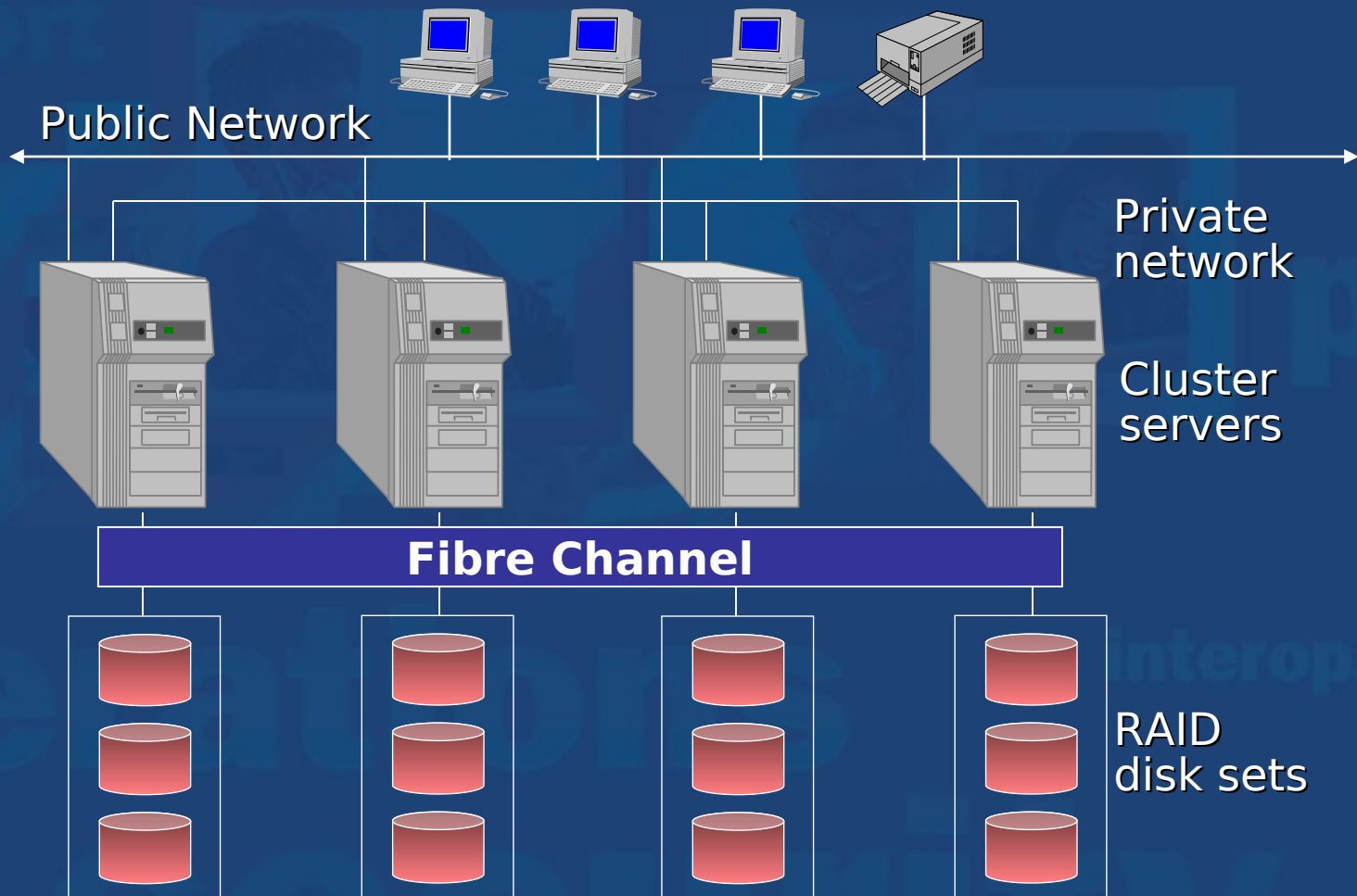
2-Node Back-end Server Cluster

*Windows NT Server 4.0, Enterprise Edition
or
Windows 2000 Advanced Server*



4-Node Back-end Server Cluster

Windows 2000 Datacenter Server



New Cluster Developer Tools

Resource scripting host

- New resource type “Generic Script”
- Define heartbeats, online/offline functions using VB Script
- Simpler to define failover for custom applications and resources
- **New IOCTL for detecting cluster volumes**
 - Will simplify development of cluster-exploitive applications
- **WMI provider for cluster events**
 - Scripts can subscribe to cluster events
 - WMI-enabled monitoring tools can receive cluster events
 - Proposed cluster event schema ...

Confidential

Confidential



Other Planned Whistler Enhancements

- **Mountpoints on cluster volumes**
 - The volume containing the mountpoint and the volume to which it points are both cluster volumes
 - Conserve drive letters to support more volumes
- **Eliminate check for duplicate network names on failover**
 - Now automatically handled by IP stack
 - Faster failover of IP addresses by several seconds
- **Rolling upgrades**

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Windows Clustering Future

■ Directions

- Support for even larger cluster configurations (clones & packs.)
- Easier installation, verification & deployment of clusters, including support for new types of hardware.
- Simpler, more powerful management of cluster-based applications and services, including continued focus on scripted, remote, and “lights out” management.
- Extension of cluster-based availability and scalability benefits to even more Windows system services.
- Tighter integration of the infrastructure and interfaces of all Windows-based clustering technologies to enhance performance, flexibility, and manageability.
- Continued support for third-party ISVs and corporate developers to simplify the development, installation, and support of cluster-exploitive

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Web Sites: Windows

- **Windows 2000 Server Family**

www.microsoft.com/windows2000/guide/server/overview

- **Cluster Services & Load Balancing**

www.microsoft.com/windows2000/library/technologies/cluster

- **Windows 2000 reliability & availability improvements**

www.microsoft.com/windows2000/library/howitworks/...management/relavail.asp

- **Deploying Windows 2000 Server (*especially Chapter 18 of Deployment Planning Guide*)**

www.microsoft.com/windows2000/library/planning/server/deploy.asp

- **Windows 2000 Advanced Server online help**

<http://windows.microsoft.com/windows2000/en/advanced/help/>

- **Microsoft Research whitepaper on cluster**

Web Sites: Other

- **Certified Cluster Hardware Configurations: Choose “Cluster”**

www.microsoft.com/hcl

- **Microsoft TechNet: High Availability**

www.microsoft.com/technet/avail/

- **MSDN Online: Platform SDK Components for Windows Base Services**

msdn.microsoft.com/developer/sdk/winbase.asp

- **Microsoft research, Jim Gray's web site**

research.microsoft.com/~Gray/

Email Aliases

- Mscclusfb@microsoft.com
 - Ideas on how to improve Windows clustering technologies & services
- Whqlclus@microsoft.com
 - Questions and feedback on cluster hardware certification

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